the astrogram

VOLUME XV
NUMBER 15
May 10, 1973

National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California

Lewis Hughes, Chief of Health and Safety Office was appointed Coordinator of Ames' 1973 U.S. Savings Bond Campaign by Dr. Hans Mark, Director. Speaking for the campaign, Hughes said, "We would like to have full participation of all Ames personnel in this campaign. The goal set for this year is 80% participation. Bonds now pay 5 1/2% when held to maturity. I plan to sign up -- who will follow?"

the astrogram

VOLUME XV
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National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California

Ames scientist receives honor

Dr. Robert T. Jones, Ames Senior Staff Scientist, has been elected to membership in the prestigious National Academy of Engineering.

The Academy is a private organization established in 1964 to share in the responsibility given the National Academy of Sciences under its Congressional charter of 1863 to advise the Federal Government in matters of science and engineering; to sponsor engineering programs aimed at meeting national needs; to encourage engineering research and to recognize distinguished engineers.

Dr. Jones is credited with the development in 1945 of swept-wing theories which were instrumental in advancing aircraft speeds into the transonic and supersonic ranges. Most jet transports now in use are based on his aerodynamic theories and on his work with slender delta wings.

More recently, Dr. Jones has proposed an aircraft design featuring an anti-symmetrical wing, in which the wing pivots on its center point. Such an aircraft, Dr. Jones says, would operate efficient-

(Continued on Page 3)

Skylab to be launched May 14

Skylab 1 and 2 Timetable

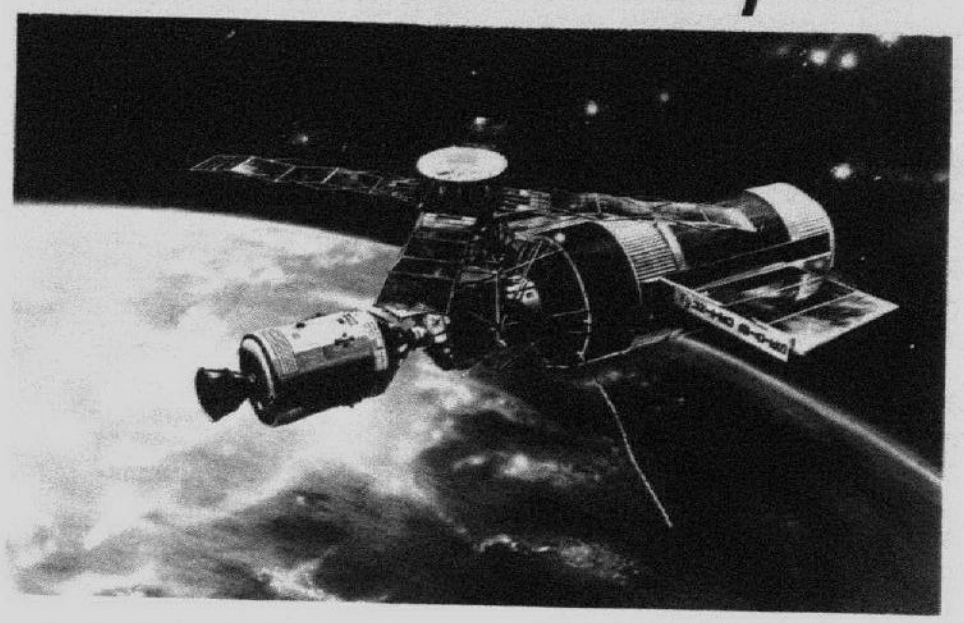
Skylab, the United States' Earth orbiting space station, is scheduled for launch at 1:30 p.m. EDT on May 14, 1973 from Kennedy Space Center, Fla.

Skylab will operate for eight months in Earth orbit and will be occupied at intervals by three-man crews who will conduct scientific and technical investigations and observations relating to such areas as Earth resources, physiological effects of long duration weightlessness, solar phenomena and metals processing in zero-G.

One day after the Skylab launch, May 15, at 1 p.m. EDT, astronauts Charles "Pete" Conrad, Jr., Joseph P. Kerwin, and Paul J. Weitz will be launched from KSC into Earth orbit aboard an Apollo spacecraft where some seven and one-half hours later they will dock with Skylab to begin their 28-day mission.

On June 10 the Skylab crew will don space suits and at 1 p.m. EDT Conrad will maneuver outside the space station to retrieve film from the Apollo Telescope Mount while Kerwin stands in the hatch of the Multiple Docking Adapter to assist.

The morning of June 12, the astronauts will enter their Apollo spacecraft, undock from Skylab, and prepare for return to Earth. Splashdown is planned for 1:44 p.m. on the 12th at 25 degrees north, 127 degrees 04' west, about 800 miles southwest of San Diego.



. SKYLAB -- MANNED ORBITAL SCIENTIFIC SPACE STATION . . . Skylab is the name of an experimental space station program of the An extension of the manned Mercury - Gemini - Apollo space programs, the Skylab Program will make extensive use of the hardware and technological knowledge developed during those previous missions. The Skylab is designed to expand our knowledge of manned earth-orbital operations and to accomplish carefully selected scientific, technological, and medical investigations.

(MORE ABOUT SKYLAB ON PAGE 2)

This photograph of the heavily damaged railroad yards at Roseville, California, was made April 29th from a NASA Earth Resources Survey Aircraft flying at 22,000 feet. NASA took the pictures in response to a request from the state Office of Emergency Services using special cameras which operate in the near infrared portion of the spectrum.

Ames scientists and Model Shops play role in Skylab mission

When Skylab is launched May 14 it will carry two instruments developed by Ames; a space sextant and a space stadimeter. Similar to the sextant and stadimeter used by sailors, the instruments will be tested by Skylab 3 astronaut Jack R. Lousma for space navigation.

If something should happen to Skylab's primary system, such manual instruments for guiding Skylab through space would prove invaluable.

The instruments were developed primarily by Robert J. Randle, LTI, Principal Investigator for the project; Louis J. Polaski, PDF, and Emmet Lampkin, formerly of the Human Performance Branch. When their job was finished and the instruments were ready for space, the problem of getting them safely into space arose.

The Saturn V launch will cause such vibrations in the Skylab workshop that without some protective covering the delicate instruments would be damaged. A request for a locker was given to Ames engineer, James R. Rogers, FSO.

"It looks very simple, but you can't believe the complexities of making something for space use," says Rogers describing the locker.

When time and money limitations could not be met by contract manufactuers the help of Ames' shop facilities were solicited.

"The Ames model shops would really be spotlighted in this," he says. "They're the ones who did

(Continued on Page 2)

Skylab astronants will be able to get home in an emergency

When Skylab is orbited next week, the first limited capability to rescue astronauts in space will become a reality.

In the Mercury and Gemini programs, the spacecraft could not be used for rescue because of their restricted size and life-support capability and there was no way to pick up the two astronauts if they were stranded on the moon.

With Skylab, the orbital workship offers long-duration life support in Earth orbit and a practical rescue capability is feasible.

In each of three Skylab visits, the astronauts are flown to the space station in a modified Apollo command and service module (CSM). The CSM is powered down after docking and Skylab activation and remains available for life support and crew return in the event of an Orbital Workshop (OWS) failure. Therefore, the only failures to be considered for rescue requirements are loss of CSM return capability or the loss of accessibility to the CSM. In this event a second CSM would be launched carrying only two men with room for the three astronauts to be picked up in orbit and the rescue CSM would then return with a crew of five.

The three Skylab manned launches are about 90 days apart.

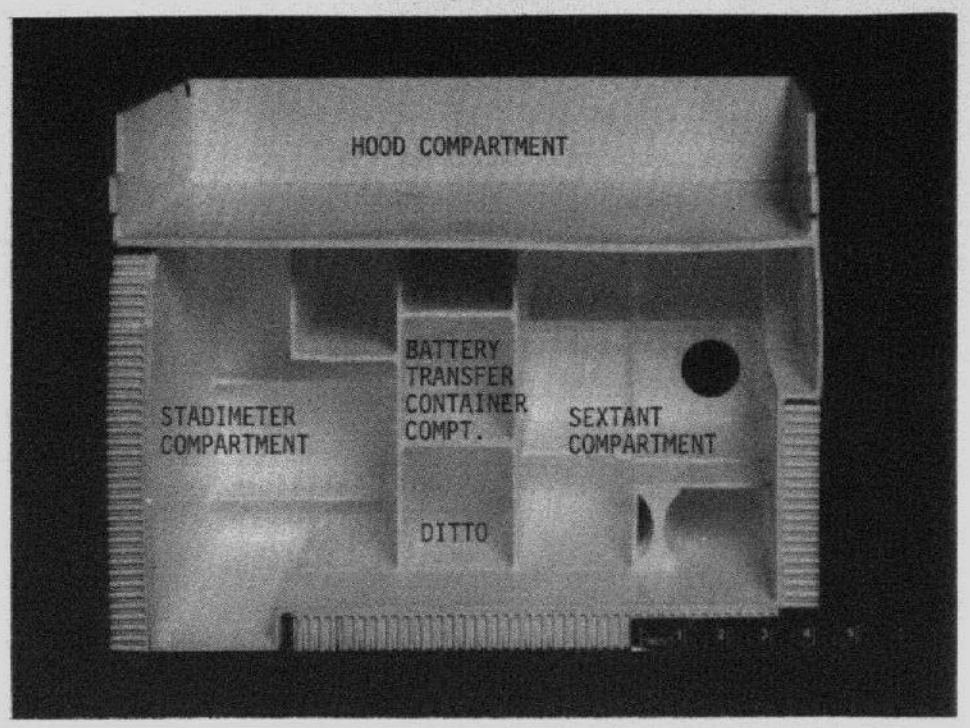
Therefore after each of the first two manned launches, the next vehicle in normal preparation for launch would be used for rescue if needed. After the third and final manned launch, the Skylab backup vehicle would be made ready for possible use as a rescue spacecraft.

Just how long the Skylab astronauts would have to wait for rescue depends on the point in the mission when the emergency develops. The wait in the well-supplied Orbiting Workship could vary from 48 days to 10 days.

If, for instance, the need for rescue arose on the first day of Skylab's occupancy of reoccupancy, present work schedules indicate that it would take 48 days for the launch crews to ready the rescue launch vehicle and spacecraft. This includes 22 days which would be required to refurbish the launch tower following the previous launch. During this period the rescue kit would be installed in the CSM, a task which takes about 8 hours, and the entire vehicle then prepared for stacking. After being moved to the launch pad for final checkout and servicing, the countdown which requires about a week, would begin.

The later into a mission the need for rescue might arise, the sooner the vehicle would be ready for launch. The launch-response time is reduced to 28 days and 10 days at the end of the first and third missions, respectively.

Providing rescue modes for all conceivable emergency situations would require instantaneous response - a capability not feasible with present space vehicles because of elaborate launch preparations. Faster response must await a new generation of space transportation such as the Space Shuttle. However, the planned rescue techniques for Skylab cover the most likely emergency situations and add a new dimension to manned space flight.



INSTRUMENT LOCKER . . . made by Ames Model Shops to fly on Skylab May 14.

Model Shops

(Continued from Page 1)

the innovative work. They developed new techniques and repeatedly came up with better ways to meet the stringent Skylab specifications."

The first problem for the shop personnel was finding a material that would fit their needs and meet the Skylab approval. Micro-Syl, a North American Rockwell product was finally decided upon. It is a silicone rubber filled with echospheres and sodium bicaronate.

The shops were able to improve upon North American Rockwell's procedures by developing tools and techniques for injecting Micro-Syl into large one-piece, deep-draft molds without trapping air bubbles, which resulted in void free high quality modules. The deep draft made the modules difficult to remove from the mold so the shop developed a parting technique for removing the modules with ease and without tearing or contaminating the modules.

The results were outstanding. Due to the shop's efforts, the cushion locker met all requirements and specifications. The development and manufacturing costs were approximately $16,000, almost one fifth the cost estimated by a contractor. Delivery of the package was within the three-month schedule, five months sooner than a contractor had estimated. The locker was molded as two pieces that weigh less than eight pounds or two-thirds the allowable weight. The modules were essentially void free, and the damping characteristics were well within specified limits. The modules also met all instrument and locker fit requirements.

In a report written by James Rogers on the project, he says: "Without the professional efforts of our Environmental Research Branch and especially the Model Development Branch this Skylab experiment would have had to be cancelled, which would have been a loss of about $500,000 already expended on this project for materials and services."

Rogers also developed a hood that will protect the instruments from glare while in use.

Skylab Library booked solid

A silent librarian and a "Keep Quiet" sign will preside over the library in the Skylab space station during its Earth orbit this year.

Even in space, 270 miles from Earth, an astronaut who borrows a book must sign for it. Since each of the three crew members is scheduled for one hour off duty every day (besides his sleeping period), space officials polled the astronauts on the kinds of entertainment they would prefer. Reading in the "library" was one of their top preferences.

Skylab's library consists of a storage rack holding 36 paperbacks and a kitchen table for reading. The silent librarian is the closed circuit TV that will monitor the astronauts' activities at all times.

To borrow a book a crew member must place a specially marked bookcover on his book in use, and to identify him as the borrower.

And although the astronauts won't be writing home during their off duty breaks, several other options are available.

The dual reading-kitchen table may also be site of card games among the three man crew, or "head to head." A deck of cards was a popular item in the poll. But in order to keep them from floating around the room in the weightless environment, the cards will be mounted on small clamps held to the table by magnets.

Since the crews wanted to experiment with weightlessness, three balls for playing catch and a dart board have also been included.

Thank You

"To all of Herb's friends, thank you so very much for the flowers and many kind thoughts.

Very Sincerely,
Eleanor Cross and
family."

The astrogram
Admin. Mgt. Building
Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

Editor . . . . . Jeanne Richardson
Reporters . . . . . NASA Employees

Deadline for contributions:
Thursday between publication dates

The team which conducted the first human bedrest studies at Ames, and Dr. Harold Sandler who was instrumental in originating the study, was presented a Group Achievement Award recently. Mrs. John E. Greenleaf, Robert W. Staley and Dr. Sandler accepted the award from Dr. Harold P. Klein, Director of Life Sciences Directorate, during an informal ceremony in his offices.

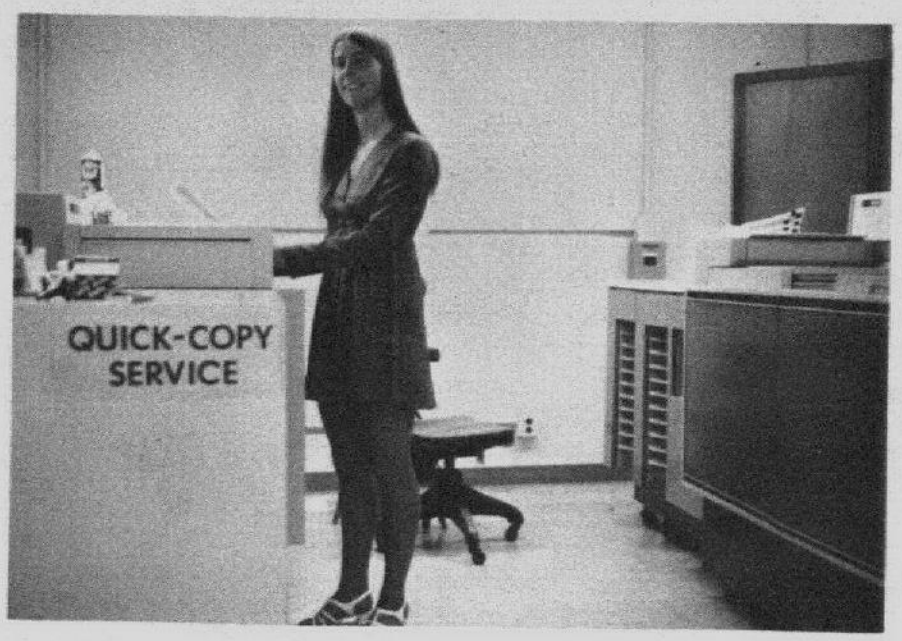
Mrs. Greenleaf accepted the award for Dr. Greenleaf who is at tne Polish Academy of Sciences in Warsaw, Poland, on a three-month Exchange Fellowship under the aegis of the National Academy of Sciences.

"Boss of the Year" . . . Al Hertzog, Chief of the Procurement Division was elected Boss of the Year by the DeAnza Chapter of the American Business Woman's Association last month. He was nominated by Kathleen Thurman, pictured above presenting Hertzog with a trophy.

Mrs. Thurman, who came in second as the Chapter's Woman of the Year, is a buyer in the General Procurement Branch. She has worked for Hertzog for 19 years.

In her recommendation for the award she writes of her boss; "The difficulties encountered in the running of a procurement office at times seemed to have insurmountable odds, but with tenaciousness, Al has scaled that tall mountain. This has been accomplished by his outstanding leadership, having procurement expertise that few others can surpass, and his ability to select personnel with the capability to accept delegated responsibility to get the job done. Through this development program, Al has cultivated the Procurement Division into a close-knit group with an "esprit-de-corps" atmosphere that has become the envy of every Division at Ames.

QUICK COPY SERVICE



LINDA TUNIS . . demonstrates Reproduction Services' Quick Copy machine.

NEED COPIES FAST?

In most cases turnaround time for copies will be 24 hours or less. Reproduction Services copiers are the most efficient at the Center. You can't beat the price -- NO CHARGE to your organization and a minimum cost to the Center.

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The larger the job the more economically WE CAN DO IT.

No limit to the number of originals submitted, but we do ask you to limit your requests to 20 copies of each original. Requests exceeding 20 copies should be forwarded to Reproduction Services Branch, accompanied by a Service Request (ARC 73) to take advantage of available economies through the offset printing process. Exceptions to the 20 copy limitation will be granted where justified for such reasons as unavoidable short lead times.

Originals up to 8 1/2" by 14" can be copied.

Collating can be done AUTOMATICALLY.

A supply of Quick-Copy work orders (ARC 388) is available in the stockroom -- quick and simple to prepare.

A REMINDER:

Quick-Copy is not equipped to handle drilling or punching or the stapling of documents over 5/16" thick (to provide this service would seriously affect our turnaround response for copying).

Requests that infringe upon copyright laws or violate other copying regulations cannot be accepted.

Classified material must be handled per security regulations.

To place an order, prepare in duplicate a Quick-Copy work order (ARC 388) and submit it with the work to be copied, in a Quick-Copy Service envelope (ARC 427) through the regular internal mail system. It will be delivered directly to Quick-Copy.

Xerox classes are available to key operators interested in copier operation instruction. Classes are held at Xerox Corp. in Santa Clara and last about 2 1/2 hours. Contact Bill Balandis, ext. 5829 for details.

Photo display

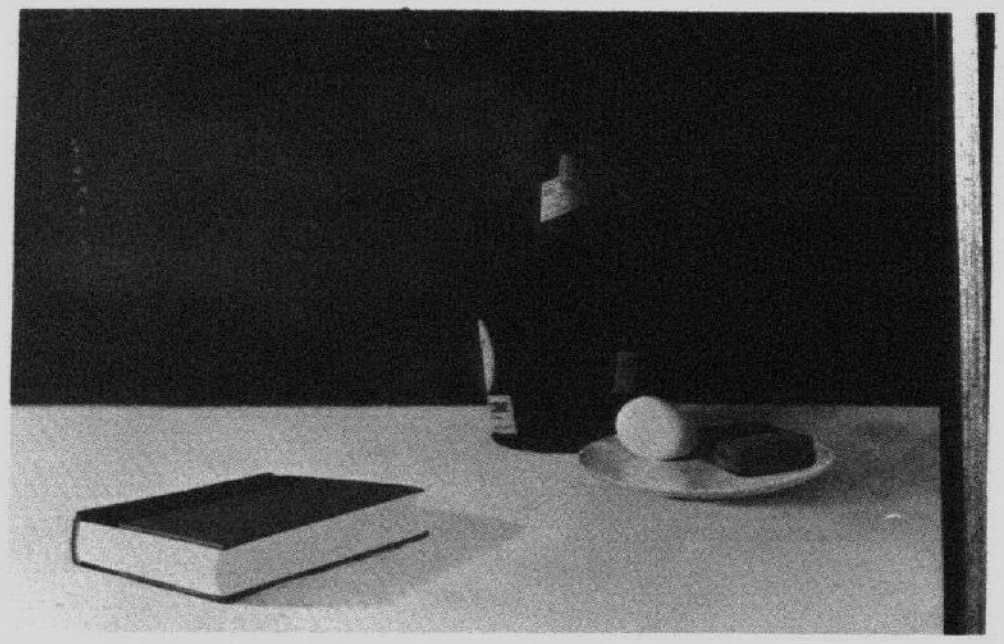
A permanent display of photographs produced by the Ames Photography Club has been installed in the Ames Library, building 202. The photographs, taken exlusively by the club members, will vary in number and size. They are displayed on the stairway landing between the first and second floors of the library.

R. T. JONES

(Continued from Page 1)

ly at both supersonic cruise speeds and at low speeds for landings and takeoffs.

Election to the Academy is the highest professional distinction that can be conferred on an American engineer and honors those who have made important contributions to engineering theory and practice or who have demonstrated unusual accomplishments in the pioneering of new and developing fields of technology.



"BENEDICTINE FOUR" . . . painted by Cary O. Fisk, AFSP, was selected by the 11th Annual Benedictine Art Awards as one of 35 works to be displayed in a special exhibition at the Manufacturers Hanover Trust Gallery in New York City. Cash prizes will be awarded for the best of the 35.

Chosen from a field of over 3000 entries, Fisk's oil painting is a still-life of a book, bottle, egg and toast done in neutral colors. Fisk began painting in 1967 as a hobby. He has never taken an art lesson.

MBA Orientation

Two televised orientation programs for employees interested in the Golden Gate University MBA Program have been scheduled as follows:

DATE: Tuesday, May 15
TIME: 12 - 1 p.m.
CHANNEL 12

DATE: Thurs., May 17
TIME: 12 - 1 p.m.
CHANNEL 12

Location - Building 202, room 5A

Mrs. Jeanette E. Kyles, secretary for the Contract Management Branch, was honored with an orchid on National Secretaries Day, April 25. "I was so surprised," said Jeannette. "They called me into the office and asked me if I knew what day it was. Well, I had no idea. So, they told me it was National Secretaries Day and they were honoring me, then they all clapped. I thought that was it, then they brought out this big box and the orchid was inside. Isn't it beautiful?" she asked.

A Farewell to Ames

A NOTE FROM THE EDITOR

I am leaving Ames and "The Astrogram" on May 11. I will be married on May 19, and then will go into a teaching program at San Jose State University to get a secondary teaching credential.

The new editor is Mrs. Meredith Moore, a U.C. Santa Barbara graduate. She is 26, and lives in Los Altos Hills with her husband, Charles, one dog, four cats, a parakeet named Scott (after the Apollo 15 astronaut David Scott), and a racoon named Racquel. Her mail stop is 241-4, her extension is 5422.

SOFTBALL

The NASA Fastpitch Softball Team starts play in the San Jose Coleman League on Thursday, April 26. Bob Randle, team manager, has 14 ballplayers on the roster. Players from last year are George Alger, Barry Scott, Jim Myers, Bob Corbett, Bob Bell, Tom Knight, Don Kornreich, Frank Steinle, and Bruce Ganzler. Newcomers are Roger Hedlund, Larry Olson, Everett Maynard, Harry Cygielman and Don Johnson. The NASA team will be playing the following schedule for the First Half of play at Columbus Park in San Jose.

April 26	8 p.m.
May 3	9:15 p.m.
May 10	9:15 p.m
May 17	8 p.m.
May 24	6:45 p.m.
June 7	6:45 p.m.

WANT ADS

ADVERTISING of articles or services in this publication is restricted to employees of Ames Research Center and on-site employees of support contractors. Articles or services advertised herein must be offered for sale or rental as advertised, without regard to race, color, religion, sex or national origin.

Advertiser must be identified by name, extension and organization. The name may be left out of the ad, but is needed for records. Ads must be submitted in writing to The Astrogram, N241-4, by Wednesday, a week before publication. The advertiser's home phone number must be used except in carpool notices. Ads must be limited to 15 words or less. Ads longer than 15 words will be cut down before printing.

TRANSPORTATION

FOR SALE

70 Toyota Wagon, auto. trans., low mileage, $1800 or best offer. 248-7554.

---

67 Olds, Cutlass Supreme, A/C, R/H, PB/PS, ex. cond., Tudor hardtop. $1000. Call 257-7454.

---

66 Interntl. Wagon, many dingles but a heart of gold! $800. Al Boissevain 327-8319.

---

70 VW pop-top camper, mechanical perfect, many extras, new tires, outside oil cooler, $2400, 251-4474.

---

58 GMC 3/4 ton pick-up truck, 4 spd. auto transm. mud tires, R & H. Reas. Lepetich 948-8002.

---

68 GT Cortina (English Ford), 40,000 miles, new tires & brakes, $675, call 259-2925.

---

62 Ford Country Sedan, new tires battery, carburetor. All else very tired. $200. 736-4631.

---

72 Benelli 60cc trail mini-cycles, matching pair, street licensed, 4 spd., V. Nicholson, 326-0204.

HOUSING

FOR RENT

Sunnyvale, 2 bdrm., 1 1/3 ba., new townhouse. Pool, refrig., dishwasher, $250, 732-7055.

Palo Alto, 4 bdrm. furnished home. About 2 mo. mid-June to late Aug., $420/mo., 493-6462.

2.5 acres in Scotts Valley. Redwoods, year-round creek, road frontage. Helen Kelton, 366-4800, evenings.

MISCELLANEOUS

FOR SALE

71 22' Luger Dual-Cabin Cruiser, F'glass Hull, 55HP OB, Tandem Trailer. $3750. 379-1178

2-end, coffee & corner tables, 2 table lamps, pole lamp $30. Rich Taylor, 248-7537.

Glorious lab. puppies, no papers, $15, call 253-6294, Cupertino.

Ladie's water ski vest, size med., worn twice, $18; Sears Flexing Exerciser, $30. 739-0715.

G.E. elec. stove/dble oven, $45; G.E. dryer, $30; record collection (100 assorted) $25. 252-8950.

Baby crib with mattress & stroller, $20; mahogany china closet, $35. 252-8950.

Simmons double bed mattress & interspring. D. Black, 329-8277.

---

9 foot contemp. sofa & 64 inch love seat, "exotic flame" color, rnd. glass top pecan dining table. 736-7439.

Formica table top, 60 x 40, w/legs, (second dining or study table), $28. 321-1858.

Agfa camera w/case, ex. cond., v.good results. $25. Sekonic lightmeter, $5. 321-1858.

Recording tape, Scotch Dyna. series, #203, 1/4 x 1800" reel, never used, $5. 321-1858.

Gas powered lawn edger, home made. Joe DeRose, 269-8158.

---

6 yr. crib & mattress. Baby clothes to size 4. Odd pieces of lumber. 493-6462.

WANTED TO PURCHASE

9 x 12 or larger tent in good condition. 257-0583.

LOST

Blue sweatshirt on jogger's course Zook road intersection near N-244, Apr. 20. Return to lost & found (N241, Rm. 119).

the astrogram

VOLUME XV
NUMBER 17
MAY 24, 1973

National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California

Ames researchers join bomb squad

An instrument used at Ames to measure skin temperature of wind tunnel models was put to new use following the recent disastrous explosion of a trainload of bombs in Roseville, Calif.

The instrument, called a Thermal Infrared Imager, was manned by two Ames researchers from the top of an 88-foot fire ladder and was used to help locate unexploded bombs hidden by dirt and debris in the explosion area. The equipment also was capable of indicating whether the hidden bombs were "hot"; that is if they had been heated by the explosion and fire to the point that the explosive inside was "critical" and liable to explode without warning. "Hot" bombs continued to explode for a full day following the initial blast.

Research Scientist Dr. Maxwell Blanchard and John Vongrey, an electronics technician, both from the Ames Planetary Science and Applications Branch, traveled to Roseville on Monday, April 30, the second day following the explosion. They took a commercial model of a Thermal Infrared Imager, which is used in a variety of applications in the space program.

VIEW OF CRATERS . . . at the railroad yard disaster area in Roseville, California. The area looks like a war zone. Underneath all the rubble lay hundreds of unexploded bombs which Ames scientists and equipment helped locate.

The Thermal Infrared Imager "sees" heat energy and displays a picture on a TV-like tube which shows relative temperatures of the objects in the field of view. For instance, lifelike temperature portraits of a human face are possible with the instrument recording faithfully the small variations of skin temperature of the different parts of the face.

In the medical profession, these instruments are being used by doctors to locate diseased areas or tumors in various parts of the body.

Thermal infrared equipment is in common use in the space program. Many satellites have carried these instruments as scientists study the Earth from the space vantage point. The Apollo spacecraft carried infra-

(Continued on Page 2)

Skylab delayed

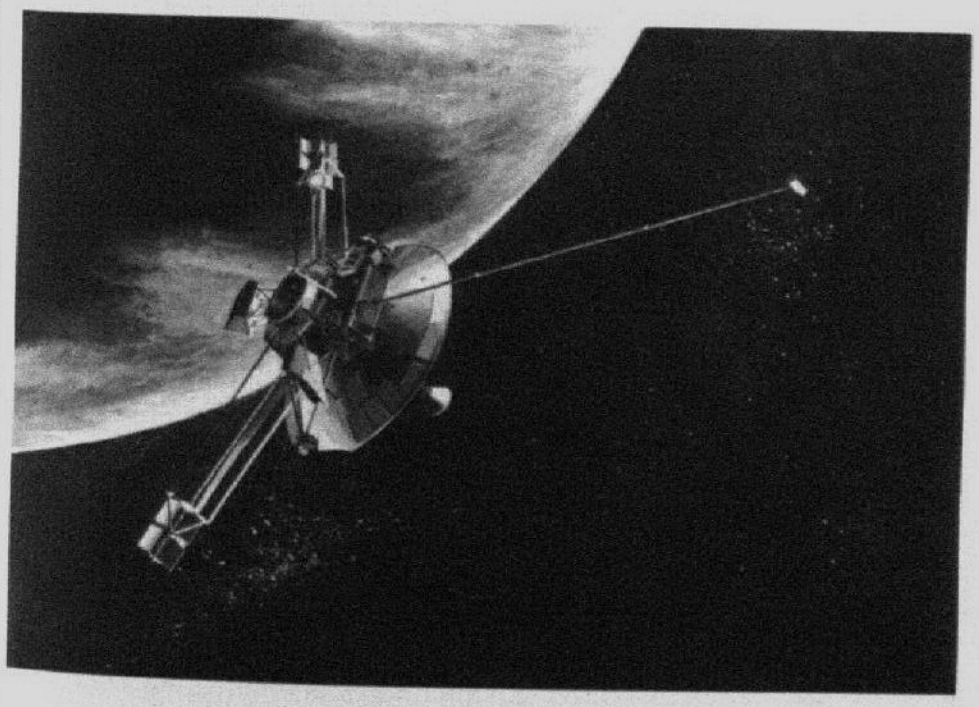
Skylab 1 astronauts, originally scheduled for launch May 15 at 1 p.m. EDT, will launch from Cape Kennedy at 9:02 a.m. EDT May 25. Failure of two 30-foot solar panels to deploy caused mission delay.

Two types of awnings or sun shades will be carried aboard Skylab 1. Astronaut Conrad will have to decide which of the two (sun shade or sail) will be most "convenient" to use to stop the scorching sun rays.

Once maneuvered into position, astronauts will also attempt to dislodge the workshop's jammed solar panels with a rod.

After the heat problem is solved, space officials feel that a full 28-day mission will result.

Pioneer 11 back-up tube working well



PIONEER 11 . . . is one month out on its way to the planet Jupiter.

Pioneer 11 is now one month out on its 20-month flight to the giant planet Jupiter. All experiments and spacecraft systems are functioning well.

The spacecraft, traveling fast enough to cross the U.S. in about two minutes (83,000 mph), has covered about one tenth of its 620-million-mile flight path to Jupiter. On its course tangent to the Earth's orbit, Pioneer 11 has moved almost 14 million miles away from Earth over the past month.

Ames controllers of the Pioneer 11 spacecraft have switched from the main power tube for the radio transmitter to a backup tube because of problems in tube operation. The backup tube is working well, and no further problems are expected.

The main amplifiers (power tubes) for the 8-watt Pioneer 11

(Continued on Page 3)

Ames scientists assist in Skylab

Ames' Chemical Research Projects Office provided outstanding assistance to solving a problem which developed in the cooling systems of the Skylab tape recorders and in the Skylab Control and Display (C & D) Panel in mid-March.

Corrosion deposits were appearing in the aluminum tubing of the cooling system. Before Skylab could be launched it was imperative that the system's coolant loop work correctly; if it failed, collection of data for experiments like the Earth Resources Experiments Package (EREP) would be fruitless.

Kenneth S. Kleinknecht, Manager of the Skylab Program from Johnson Space Center, called upon Dr. John A. Parker, Chief of Ames' Chemical Research Projects Office, to assist in solving the coolant loop contamination problem on Skylab.

Dr. Parker and his associates who included Demetrius A. Kourtides, Richard H. Fish, Dr. A. H. Heimbuch, Dr. D. E. Cagliostro and Dr. Kenneth G. Snetsinger (SSG) began their work at once.

The first step was to analyze the chemical composition of the corrosion deposits which appeared in the aluminum tubing. Research scientists identified the corrosion deposits as aluminum potassium phosphate. In simple terms, the

(Continued on Page 2)

SAB holds meeting at Ames

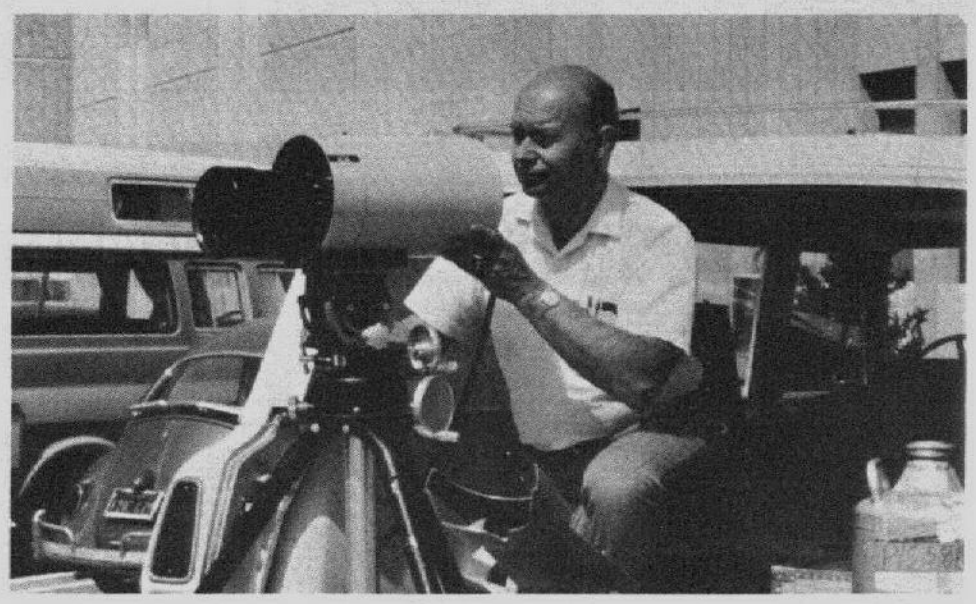
AMES DISPLAYS HIGHLIGHTS . . . to visiting SAB participants. Shown above are the Flight Simulator for Advanced Aircraft (FSAA) model (foreground) and the Convair 340.

Ames was chosen to host the biannual USAF Scientific Advisory Board (SAB) Spring Meeting on May 3 and 4 which had as its theme, "Simulation." SAB provided assistance on such diverse Air Force problems as aircraft, electronics, geophysics, guided missiles, personnel, simulation, training, information, processing, medicine, and conventional weapons. It was considered an honor that Ames was chosen for this meeting.

Hans Mark, Director, welcomed the board members early Thursday morning in the main auditorium. Other Ames participants were Dr. Leonard Roberts, Director of Aeronautics and Flight Systems, and Maurice White, Chief of Flight and Systems Research.

Ames hosted a luncheon and a tour of the Center's highlights on Friday. The tour group viewed various displays and models of wind tunnels, the Earth Resource Application Program, STOL, VTOL and Military Aircraft in the hangar and visited the Flight Simulator for Advanced Aircraft (FSAA) and the ILLIAC Computer.

The tours were given by various Ames employees who worked hard and successfully to show Ames' points of interest to the guests by the 3 p.m. bus departure time.



JOHN VONGREY . . . and the Ames' Thermal Infrared Imager display unit.

Scientists join bomb squad

(Continued from Page 1)

red measuring equipment to the Moon.

At Roseville, Blanchard and Vongrey had to first overcome some problems before they could get to work. Their job was to survey the area immediately around the blast craters, the very center of the disaster area. The area looked like a war zone---cluttered with twisted hulks which were once railroad cars, twisted rails, pieces of bombs and railroad ties. Rubble and dirt up to several feet thick surrounded the craters. And laying about, in and around and under, were hundreds of unexploded bombs.

Asked later in an interview how dangerous he actually considered the work, Dr. Blanchard answered that, "If a fire had developed, it is likely that there would have been a large explosion. But in actual fact, we felt there was no danger. It had been 2 days since the first blast and 24 hours since the last blast. Monday night seemed to be a good safe time to look for warm bombs as well as smouldering ones. All fires had been put out. Some craters still had water in them. Trying to find more spots where water might be needed was our job."

One by one, the problems were overcome. The Citrus Heights Fire District had a ladder truck with an 88-foot extension ladder; perfect for their needs. The truck could be parked on a cleared road area adjacent to the tracks and Blanchard and the instrument could be swung out over the craters. A portable generator was rigged to supply power at the top of the ladder and by 9 p.m. Monday they were ready to begin operations. Night work was necessary to avoid the sun. Sun shining on the area would warm the surface and mask the heat radiation from buried objects.

A four-man crew, including Blanchard and Vongrey, worked all night until the sun came up Tuesday morning. They surveyed the entire cratered area where the several boxcar loads of bombs originally detonated. The images produced by the Thermal Infrared Imager clearly showed various objects both on the surface and beneath the surface. The cylindrical form of a buried bomb, for instance, warmer than the surrounding dirt, was unmistakable.

Dozens and dozens of buried bombs were pinpointed. The crew however was able to assure authorities that none of these bombs were at that critical temperature state where they might explode without warning.

Dr. Blanchard is back at his desk at Ames working on yet another application of Thermal Infrared equipment. He wants to find out if they may be of use in the prediction of landslides. This would make them a valuable tool in the evaluation of highway cut, building sites, etc. But using the equipment for the detection of unexploded bombs was a use he hadn't counted on.

Reseachers help solve Skylab problem

(Continued from Page 1)

coolant solution was reacting with the aluminum tubing to form deposits of aluminum potassium phosphate. Researchers now needed to know if the deposits would eventually cause total operational failure within the cooling system tubing.

The next step was to build a simulator which would duplicate the Skylab tape recorder and C & D Panel cooling system. The simulator demonstrated that the existing cooling system could operate safely within Skylab. Ames' scientists suggested that the Skylab astronauts check the pH of the coolant solution in the system periodically. Additional suggestions were made to the Skylab Programs Office to modify the operational procedure to eliminate stagnation of the collant solution in the tape recorder system.

Kleinknecht thanked Dr. Parker and his associates for their time and effort and for allowing the Skylab program to proceed with confidence.

CORROSION PRODUCTS . . . in aluminum tubing of Ames' Skylab recorder simulator.

astrogram

Room 142
Admin. Mgt. Building
Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

Editor . . . . . Meredith Moore
Reporters . . . . . NASA Employees

Deadline for contributions:
Thursday between publication dates

Pioneer 11 tube working well

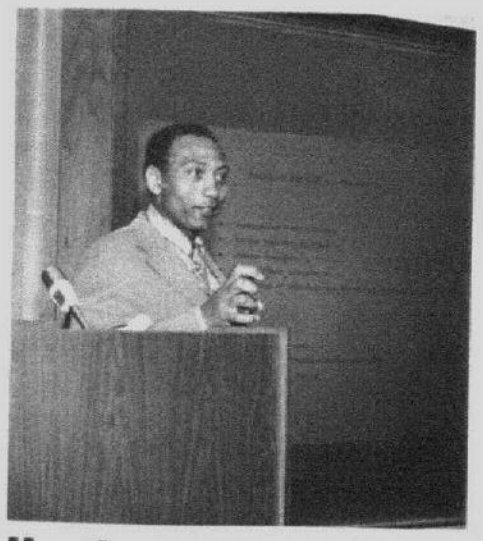
(Continued from Page 1)

radio signal are two traveling wave tubes (TWTs). Only one tube is required for spacecraft operation. The second TWT, identical to the first, is a backup only.

While Pioneer spacecraft analysts at Ames are still analyzing data, they now believe the primary tube has problems because they see a slow and erratic reduction of its power output. Power of the radio signal received at Earth has never been affected, but Pioneer 11, still relatively near the Earth, is using its medium-gain antenna, and does not require full performance from the extremely light and compact TWT power tubes.

In a long-planned maneuver, controllers are planning to change the pointing direction of the spacecraft so that both point directly at the Earth. This will allow a shift to Pioner 11's narrow-beam high gain antenna, and a fourfold increase in the rate of data return, to maximum data rate.

Similar difficulties with a TWT on Pioneer 7 caused a switch to the backup tube for six years, 1966-72. This problem corrected itself.



Hughes at seminar

More than 100 Safety Officials representing federal agencies and various California based companies recently attended a two day NASA Safety Seminar at the Kennedy Space Center's Western Test Range Operations Division headquarters building at Vandenberg Air Force Base, Calif. The meeting conducted by Lou Rubinstein, KSC/WTR Safety Engineer, offered informative lectures by experts in their field, including Fracture Control of Flight Weight-Pressure Vessels, Toxicology, and Pertinent Comments on Occupational Safety and Health Act (OSHA). A briefing and tour of the NASA and Air Force Missile facilities highlighted the event. Shown above, Dr. Lew Hughes, Chief of Ames' Health and Safety Office, briefs seminar attendees on toxicology.

Careful of bats

Rabid bats have been sited in various sections of Santa Clara County.

A word of warning comes from Ames Safety Officer, John Habermeyer, "Please don't touch any bats you may see. Rabies can be easily contacted."

If any bats are by chance seen at Ames, please notify the Safety Office at ext. 5602 or 5606; off Center, please contact Neil Bohnet, Chief of County Animal Control, Santa Clara County Health Department, at 297-1636, ext. 287.

Gourmet dinner set

The 9th Ames Chinese Gourmet Dinner will be held at The Golden Pavilion in Los Altos (just south of the Cabana) on Friday, June 8. No-host cocktail begin at 6:45 p.m. dinner is scheduled for 7:45 p.m.

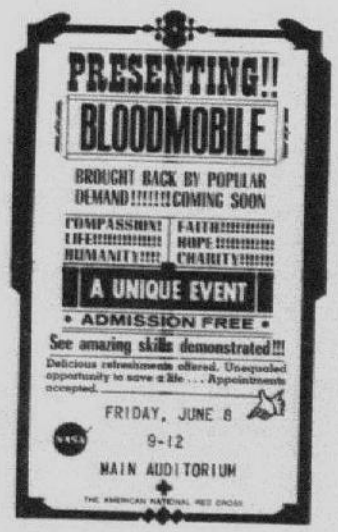
The cost is $6 per person, including tax and tip. For reservations, call Guy Wong (6022). Cut-off date for payment and/or refund is Wednesday, June 6.

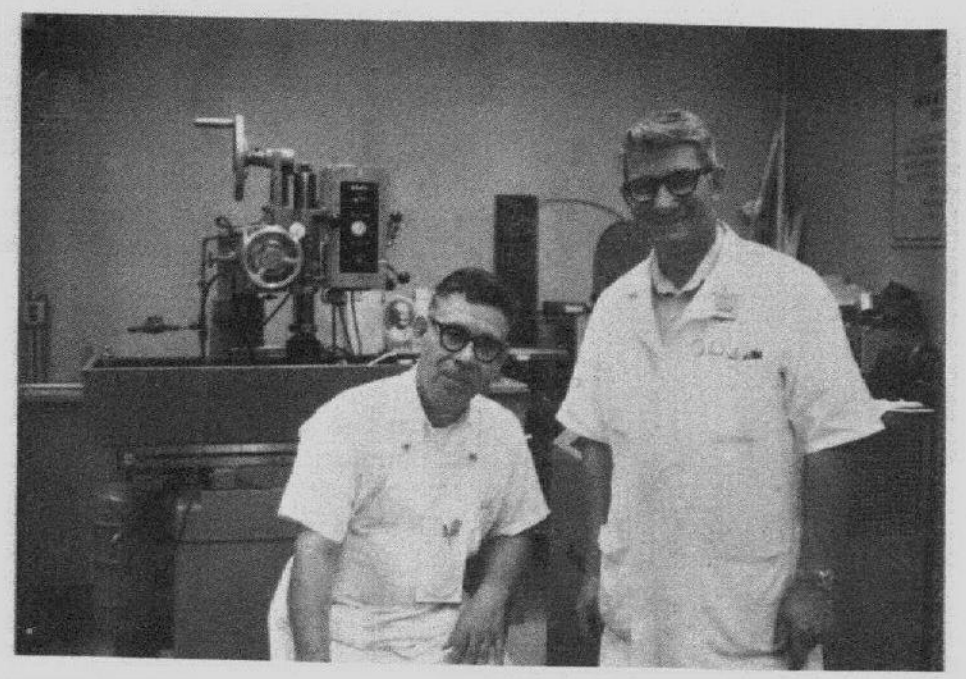
AIAA meets May 31

The American Institute of Aeronautics and Astronautics' (AIAA) next dinner meeting will be held Thursday, May 31, at the Fremont Inn, 46845 Warm Springs Blvd. in Fremont.

For reservations, please call one of the two following numbers before Friday, May 25:

Ames (Joan) ext. 6440
Lockheed 742-4430





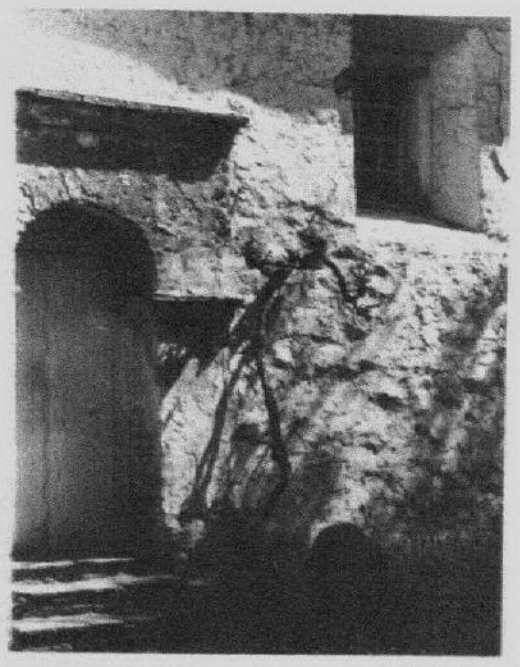
TECH BRIEF AWARD WINNERS . . . Richard H. Dowell (left) and Charles S. (Sid) Copeland from the Model and Instrument Machine Branch were 2 of 23 award winners this month. Each received $25 for their respective Tech Brief publications.

23 Tech Brief Awards

Tech Brief Awards are public announcements of new technology derived from the U.S. Space Program.

Twenty-three such awards were presented to Ames and contractor employees in the Director's Conference Room on May 15. Bradford A. Evans, Technology Utilization Officer, made the presentation.

The recipients and their technology are Charles S. (Sid) Copeland, RSM, "Chuck for Delicate Drills;" Hubert C. Vykukal, LTC, "Restraint and Locomotion Aid;" Bill A. Williams, LTC, "A Thermocouple Thermode for Small Animals;" James O. McClenahan, SSO, "Photomultiplier Blanking Circuit;" Paul D. Rowley, STG, Kenneth W. Billman, STG, James Stallcop, STG, and Leroy L. Presley, FAA, "Measurement of Electron Density and Temperature in Plasma;" Maxwell B. Blanchard, SSG, Neil H. Farlow, SSG, and Guy V. Ferry, SSG, "Analysis of Microsize Particulates;" John C. Arveson, SSG, John P. Millard, SSG, and Ellen C. Weaver, San Jose State University contract employee, "Assessment of Water Pollution by Airborne Measurement of Chlorophyll;" Richard H. Dowell, RSM, "Vise to Hold Bones or Other Irregular Objects;" Theodore Wydeven, LTC, and John R. Hollahan, LTC, "Oxygen Plasma Used to Synthesize Superoxides;" Kenneth A. Lincoln, STP, "Laser Mass Spectrometer;" Donald M. Kuehn, STG, "Oscillation of Laser-Beam Intensity as Observed with Beam Splitters;" Dean R. Harrison, RFD, and John Dimeff, R, "Diode-Quad Bridge for Reactive Transducers and FM Discriminators;" Albert Garavaglia, RFE, and Dennis Matsuhiro, RFE, "Seat Belt Restraint System."



"GARDEN WINDOW" . . . by G. S. Deiwert, STG, won the Ames Photography Club's April competition.

Bill Vanderbeek (above)of Metals Fabrication Branch won first place in an asymmetric model airplane contest sponsored by the local American Institute of Aeronautics and Astronautics on Saturday, May 5, in the Ames Flight Operations hangar.

The purpose of the contest, according to Vanderbeek, was "to get the public used to seeing the asymmetric design and to publicize the design's practicality and feasibility." Vanderbeek modeled his plane after the design of Ames' aerodynamicist Dr. R. T. Jones. Dr. Jones' design features an anti-symmetrical wing, in which the wing pivots on its center point.

Saturday's contest attracted 25 entrants. Organizer of the contest was Mamoru Inouye, STT. Each model had to be asymmetric in design and meet a 30 square inch wing span limitation. Distance, design and duration were the categories set up for judging.

Judges for the contest were Jones, Ralph Carmichael, FAC, George Xenakis, FSN, and Henry Cole Jr., a retired Ames researcher.

The best cumulative score determined the overall winner. Vanderbeek tied for first place in "distance," placed second in "design," and came in third in "duration." His total score gained him a trophy and a $10 gift certificate.

Booklet available

A new 12 page booklet entitled "Ames Research Center, NASA" is now available to all Ames employees free of charge. The publication describes the basic accomplishments of outstanding scientists and engineers in the many disciplines at Ames.

To obtain a booklet please write to the NASA Audio-Visual Facility, c/o Public Affairs Office, Mail Stop 204-12 indicating the number wanted, the name and mail stop.

Requests must be written. No telephone calls will be honored.

New Ames club

Newly formed ARA Club will promote trips within the United States and to foreign countries similar to the recent Launch of Apollo 17/ Bermuda Trip which had 251 participants.

One more trip will be offered in the Fall and two or three trips for 1974 will be announced early in 1974 to enable everyone to plan their vacation early.

The ARA Club is anxious to receive suggestions on destinations and types of trips desired. Please forward suggestions in writing to anyone of the officers below or to Jean Moorhead, 211-3. Club business will not be handled during working hours. The contacts for each trip will be announced with the trip plans. Club officers are:

President . . .	J. Konrath	233-2
Vice Pres. . . .	J. Remington	241-6
Secty	J. Clemson	241-8
Treas	M. Donahoe	204-7

Goodwin in "Sunset"

Glen Goodwin, Director of Astronautics, was featured in "Sunset" magazine's 75th anniversary issue (May) as one of "two dozen distinguished Westerners (including 9 governors) all involved with change, all involved with tomorrow."

Goodwin discussed the Earth Resource Survey aircraft and programs at Ames. He pointed out that Ames is adapting technology to improve Man's environment.

GOLF

The tournament held at Alameda South Course on May 5 was on an individual low net score. Ken Souza, Chairman for the event, reported the following winners in the three flights:

1st flight - S. Hing, 1st place; P. Kutler, 2nd place; L. Hockstein, 3rd place; and W. Mosher, 4th place.
2nd flight - M. Orozco, 1st place; J. Bull, 2nd place; C. Eddy, 3rd place; and J. Neland, 4th place.
3rd flight - E. Hampel, 1st place; H. Mulkern, 2nd place; B. Gray, 3rd place; and E. Mitz, 4th place.

The next regular tournament, The Oyama Open, will be held at De Laveaga in Santa Cruz on June 9. Sign up to play by calling Chuck Turnbill (5218), or Vance Oyama (5763, 5765) by May 30.

TENNIS PLAYERS

Please watch for an important announcement in the next ARA Bulletin (June 5, approximately).

WANT ADS

TRANSPORTATION

FOR SALE

68 Chev. 1/2 ton Fleetside 8 ft. bed, 4 spd. 6 cyl, clean, $1450, Carl James, 368-7153, eves.

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72 Chevy 3/4 T. PU Super Cheyenne, A/C, PB/PS Unblemished, $700 below book, Malmin, 961-8093.

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66 Dodge Coronet 440 2 seat wgn, auto, PS, R/H, $700 or best offer, 275-8758.

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66 Buick Sportwagon, Stick Shift, Positraction, SB Radials, AM-FM, Exc. Cond., $925, 244-4632.

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65 Ford Country Squire Station Wgn. $350, good trans. D. Sharpe, 738-2972.

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69 Galaxie 500, 2-Dr. Hdtp, vinyl roof, PB/PS, Exc. Cond., new tires, brakes, ball joints, whl. bearings, muffler, $1595 firm, 793-6502.

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60 Corvair, 4 Dr. auto trans, rebuilt engine, 3 new tires, smog cert., $150, 259-6069.

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67 Plymouth Valiant, auto. trans., R/H, 83,000 miles, good cond., $775 call 321-2380.

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72 Benelli 60 cc trail cycle, 4 spd, street licensed, like new, $260/ offer, V. Nicholson, 326-0204.

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69 Dodge Camper Van. Pop-top, sleeps, 4 1/2, exc. cond., 366-9814.

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64 Olds. 88, 4 Dr., V8 auto; good trans, needs love, $150, 341-3203.

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72 Ford Pick-up, 3/4 T., 350 cu.in. factory air, PB/PS, Aristocrat, Camper furnace, $5200, 379-5190 or 298-0204.

HOUSING

FOR RENT

Going to Maui? Fully equipped room and car to sublet, $20 per day, 961-6835.

Westgate area, San Jose, 4 bdrm., 2 ba. home. W/w carpet, some draperies, AEK, dishwasher, $280/ mo., avail. 6/15/73. 379-7304.

So. Tahoe home, new, 3 bdrm. 2 ba. sleeps 10, 2 mi. to casinos, $135/ wk., 252-4749.

WANTED:

Room and board for summer. 17 year old Menlo-Atherton student-research worker at Ames. Phone 948-1736.

VISITING PROF. NEEDS HOUSE . . mo. of July; care for pets, yard. Call S. Rositano, 5477, or M.Wells (614) 451-0496 collect.

MISCELLANEOUS

Remodeling? Thermador oven and cook top, best offer. Porcelain sink w/faucet, $20, 321-0625.

Canon FD 135 mm. telephoto lens f 2.5, w/case, sky filter & factory guarantee; used 1 mo., 493-1105.

Metal 1 wheel trailer, 42 x 48 x 21, box with hitches, 377-3229.

Helmet, bell R/T, Blue, 7 5/8, like new, $25. Roger Hedlund, 245-9542.

Blue-point Siamese kittens, pure-bred, quiet, box-trained & cuddly, $15 w/o papers, 837-1139.

Coffee table contemp., pecan, 42 x 18 inches, exc. cond., $30. Match end table, 24x24 inch, $25, 732-4823.

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8 ft. moss green contemp. sofa $50, orange swivel chair, $25, 732-4823.

Black powder rifle barrels; 1-58 cal, 1-45 cal. New, w/breech plub & nipple. $40 each. 967-6188.

Like new 6.2 gal hot water heat for camper. W/heat exchanger, heats while-U-drive. 248-5546.

X-76YHD Heavy Duty Penn. Count tennis balls. 2 cans of 3 balls each. $2 per can. 964-3772.

Swimming pool filter, pumps 2,800 gal. per hour, uses diat. earth, 253-4357.

Hand lawn mower. Good quality, fine blades, all ball bearing and rubber roller, 253-4357.

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6 yr. crib, $20; rollaway bed, $15; stroller, $10; hi-chair; 19"B/W TV, $30; tape recorder, SRT3d, $30; 964-3998.

Sleeping bags (3) 2-down filled and 1 wool-filled - new stuff bags, 493-7091, after 6.

Elec. range, GE, dbl. oven, 6 mo. guarantee on elec. parts & labor to install them, $150, 246-2129.

RIDE NEEDED

from Campbell, any day shift, June/ July, call David Buell, 378-8873.

LOST

Three-axis "joy-stick" for the Airborne Infrared Telescope. Please call Bob Eglington, 5477.